What is claimed is:

1. A stress-adjusted insulating film forming method being characterized in that an insulating film having a tensile stress and an insulating film having compressive stress are alternately deposited on a substrate to form said stress-adjusted insulating film consisting of said laminated insulating films.

2. A stress-adjusted insulating film forming method according to claim 1, wherein stress in said overall stress-adjusted insulating film is adjusted according to

Stress in overall stress-adjusted insulating film (σ_T)

$$= \sum_{i=1}^{n} (t_i \times \sigma_i)$$

(Where t_i is a thickness of the i-th insulating film of said stress-adjusted insulating film, and σ_i is stress in the i-th insulating film of said stress-adjusted insulating film (tensile stress is positive while compressive stress is negative).)

3. A stress-adjusted insulating film forming method according to claim 2, wherein said stress in overall stress-adjusted insulating film (σ_T) is tensile stress or compressive stress of less than $+3 \times 10^5$ dyne/cm.

4. A stress-adjusted insulating film forming method according to claim 1, wherein said insulating film is a silicon oxide film or a silicon containing insulating film including at least one of phosphorus and boron.

5. A stress-adjusted insulating film forming method according to claim 1, wherein said insulating film having tensile stress is deposited by reacting a gas mixture including organic silane and oxygen containing gas by virtue of heating.

6. A stress-adjusted insulating film forming

method according to any of claim 5, wherein said gas mixture further includes impurity containing gas.

7. A stress-adjusted insulating film forming method according to claim 5, wherein said insulating film having tensile stress is subjected to plasma irradiation after said insulating film having tensile stress is formed.

8. A stress-adjusted insulating film forming method according to claim 5, wherein said organic silane is one selected from the group consisting of alkylsilane or allylsilane (general formula: R_nSiH_{4-n} (n=1 to 4)), alkoxysilane (general formula: $(RO)_nSiH_{4-n}$ (n=1 to 4)), chain siloxane (general formula: $R_nH_{3-n}SiO(R_kH_{2-k}SiO)_mSiH_{3-n}R_n$ (n=1 to 3; k=0 to 2; $m \geqq 0$)), derivative of chain siloxane (general formula: $(RO)_nH_{3-n}SiOSiH_{3-n}(OR)_n$ (n=1 to 3)), and ring siloxane (general formula: $(R_kH_{2-k}SiO)_m$ (k=1, 2; $m \geqq 2$)) (where R is an alkyl group, allyl group, or their derivative).

9. A stress-adjusted insulating film forming method according to claim 5, wherein said oxygen containing gas is one selected from the group consisting of ozone (O_3), oxygen (O_2), N_2O, NO_2, CO, CO_2, and H_2O.

10. A stress-adjusted insulating film forming method according to claim 5, wherein said film forming condition of respective insulating films to adjust stress characteristics of respective insulating films is at least one selected from the group consisting of a film forming temperature, type of gas, and a flow rate of gas.

11. A stress-adjusted insulating film forming method according to claim 1, wherein said insulating film having compressive stress is deposited by reacting a gas mixture including organic silane and oxygen containing gas by virtue of plasmanization.

12. A stress-adjusted insulating film forming method according to claim 11, wherein said organic silane is one selected from the group consisting of alkylsilane or allylsilane (general formula: R_nSiH_{4-n} (n=1 to 4)),

alkoxysilane (general formula: $(RO)_nSiH_{4-n}$ (n=1 to 4)), chain siloxane (general formula: $R_nH_{3-n}SiO(R_kH_{2-k}SiO)_mSiH_{3-n}R_n$ (n=1 to 3; k=0 to 2; $m \geqq 0$)), derivative of chain siloxane (general formula: $(RO)_nH_{3-n}SiOSiH_{3-n}(OR)_n$ (n=1 to 3)), and ring siloxane (general formula: $(R_kH_{2-k}SiO)_m$ (k=1, 2; $m \geqq 2$)) (where R is alkyl group, allyl group, or their derivative).

13. A stress-adjusted insulating film forming method according to claim 11, wherein said oxygen containing gas is one selected from the group consisting of ozone (O_3), oxygen (O_2), N_2O, NO_2, CO, CO_2, and H_2O.

14. A stress-adjusted insulating film forming method according to claim 11, wherein said film forming condition of respective insulating films to adjust stress characteristics of respective insulating films is at least one selected from the group consisting of a frequency of plasma generating power, a bias power applied to said substrate, a film forming temperature, type of gas, and a flow rate of gas.

15. A semiconductor device manufacturing method being characterized in that an insulating film having a tensile stress and an insulating film having compressive stress are alternately deposited covering an interconnection layer on a substrate to form a stress-adjusted insulating film.

16. A semiconductor device manufacturing method according to claim 15, wherein ~~material of~~ said interconnection layer is aluminum.

17. A semiconductor device manufactured according to a semiconductor device manufacturing method set forth in claim 15.

18. A semiconductor device manufacturing method comprising the steps of:

(a) forming an interconnection layer on a substrate;

(b) forming a stress-adjusted insulating film in which an insulating film having a tensile stress and an

insulating film having compressive stress are alternately laminated covering said interconnection layer on said substrate;

(c) repeating said steps of (a) and (b) to laminate altrnately interconnection layers and stress-adjusted insulating films.

19. A semiconductor device manufacturing method according to claim 18, wherein ~~material of~~ said interconnection layer is aluminum.

20. A semiconductor device manufactured according to a semiconductor device manufacturing method set forth in claim ~~18~~ 26.